IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his capacity as ATTORNEY GENERAL OF THE STATE OF OKLAHOMA and OKLAHOMA SECRETARY OF THE ENVIRONMENT C. MILES TOLBERT, in his capacity as the TRUSTEE FOR NATURAL RESOURCES FOR THE STATE OF OKLAHOMA,

Plaintiff,

vs. 4:05-CV-00329-TCK-SAJ

TYSON FOODS, INC., et al,

Defendants.

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VOLUME I OF THE VIDEOTAPED DEPOSITION OF CHARLES COWAN, PhD, produced as a witness on behalf of the Plaintiff in the above styled and numbered cause, taken on the 17th day of February, 2009, in the City of Tulsa, County of Tulsa, State of Oklahoma, before me, Lisa A. Steinmeyer, a Certified Shorthand Reporter, duly certified under and by virtue of the laws of the State of Oklahoma.

(Whereupon, the deposition began at 9:09 a.m.)

VIDEOGRAPHER: We are now on the Record for the deposition of Dr. Charles Cowan. Today is February 17th, 2009. The time is 9:09 a.m. Would counsel please identify themselves for the Record? 09:09AM

MR. PAGE: David Page for the State of Oklahoma, and with me here today is Dr. Olsen, an expert for the State of Oklahoma.

MR. TODD: Gordon Todd for the Tyson Food Companies. 09:10AM

MS. COLLINS: Melissa Collins for the Cargill defendants.

MS. HILL: Theresa Hill for the Cargill defendants. 09:10AM

MR. FREEMAN: Bruce Freeman for Simmons.

MR. TUCKER: K. C. Tucker for the George's defendants.

VIDEOGRAPHER: And on the phone?

MR. SANDERS: Bob Sanders for the Cal-Maine defendants. I think I'm the only one. 09:10AM

VIDEOGRAPHER: Thank you. The witness may be sworn in.

CHARLES COWAN, PhD

having first been duly sworn to testify the truth,

the whole truth and nothing but the truth, testified as follows:

DIRECT EXAMINATION

BY MR. PAGE:

Q Would you state your full name for the Record, please? 09:10AM

A Charles Douglas Cowan.

Q And what is your address?

A Work or home?

Q Both, please. 09:10AM

A Okay. Home address is 5218 Sagail Place. Sagail is S-A-G-A-I-L Place, San Antonio, Texas 78249. My office address is 4939 De Zavala Road. D-E one word. Separate word is Zavala, Z-A-V-A-L-A. And that's also in San Antonio, Texas 78249. 09:11AM

Q Have you ever had your deposition taken before, Dr. Cowan?

A Yes, sir.

Q And when was that?

A Well, it's actually 30 or 40 times. 09:11AM

Q Okay. When was the most recent time?

A Two weeks ago.

Q In what matter was that?

A It was -- sorry. Moregate versus Mailboxes, Etc. It's in southern California. 09:11AM

A And I'm going to come back to this later, but the problem with the non-detects is that because non-detect limits differed even for the same analyte because of different test readings. That adds variability to the dataset. That wasn't accounted for.

Q So you suggest here on Page 26 that non-detects should be treated as zero?

A Well, that wouldn't be possible.

Q Well, you say rather than treat this as zero non-detect, Dr. Olsen substitute the midpoint between zero and the detect limit for the chemical; correct? 12:01PM

A That's what I say.

Q So what is your criticism? 12:02PM

A Well, my criticism is that it's not that there is a systematic -- it's not that there is a value substituted for the non-detect; it's that the values vary for even the same analytes. So I give an example, I believe, for aluminum where you've got different non-detect limits, and if there wasn't -- this wouldn't be an issue if the log transforms weren't taken, but once you take the logarithms, those numbers blow up into very large numbers. 12:02PM

Q Okay. What else? 12:02PM

MR. PAGE: This is number --

COURT REPORTER: 11.

Q Let me show you what's been marked as Exhibit No. 11. Are you familiar with this particular text, Statistical Methods For Environmental Pollution Monitoring? 02:41PM

A No, sir.

Q You've never seen this before?

A No.

Q You wouldn't know whether this is the leading text on environmental statistics or not? 02:41PM

A No, sir.

Q Would you turn to Page 164, please, Chapter 13. What's the title of Chapter 13?

A Characterizing Lognormal Calculations. 02:42PM

Q Would you read the first sentence, please?

A Lognormal distribution is the most commonly used probability density model for environmental contaminant data.

Q Do you have any basis to agree or disagree with that statement? 02:42PM

A You do realize that this is talking about a probability distribution that has nothing to do with this case, the lognormal?

Q Could you please answer my question, Dr. 02:42PM

Cowan?

A Okay. I apologize. What was the question?

Q Did you -- do you have any basis to agree or disagree with that statement?

A Well, based on everything else I've seen so far from the other documents you gave me, I'm not sure I'd agree. 02:42PM

Q So you disagree with the statement?

A No. Once again, you're mischaracterizing what I said. What I said was I'm not sure I'd agree. I didn't say I disagreed. I'm saying that relative to all the other documents you've shown me, this is the first time the lognormal distribution has been brought up as a probability distribution, and the other documents you gave me discussed the normal distribution and Wishart distribution. 02:42PM 02:43PM

Q So do you -- let me ask it this way then: Do you agree with the statement -- the first sentence on paragraph -- the first paragraph on Page 164?

A I don't have any way to disagree or agree. 02:43PM

Q Let me hand you what's been marked as Exhibit 12. This is the same portion of the same textbook we referred to earlier, right, that was by Dr. Murphy?

A I assume so. 02:44PM

Q Okay. Would you turn to page -- the second page of Paragraph 136 -- Page 136, the bottom paragraph.

A Yes.

Q Would you please read the bottom paragraph up to the point where the reference is to Ott? 02:45PM

A Although most -- I'm sorry, you're talking about this last paragraph?

Q Yes, sir.

A Thank you. Although most statistical tests are based on the assumption that the underlying distribution is normal, most environmental data appear to have frequency distributions that are lognormal. Two advantages of the lognormal distribution in describing environmental data are that it always gives positive values. There are no negative concentrations, and it can account for a small fraction of higher values, hotspot contamination in the right side or tail of the curve. 02:45PM

Q Do you agree with those statements?

A I do.

Q Doesn't that statement support the use by Dr. Olsen of log transformation of his data?

A No. You have completely confused taking a 02:45PM

logarithm with a probability distribution that happens to have the unfortunate name lognormal. Taking a logarithmic transformation of data does not suddenly make it lognormal. It starts out as lognormal and you analyze it that way. Dr. Olsen's 02:46PM
data was lognormal when he started. He didn't have to take a log transformation to get it into the lognormal distribution. You're talking about two concepts that are so totally far afield that it just demonstrates that you have no idea what a 02:46PM
probability distribution is relative to a transformation of data.

Q When I take a logarithm on the data, is that not the first step for doing a lognormal transformation? 02:46PM

A No. That's taking a logarithmic transformation. A lognormal distribution, which is what is being described here, is a probability distribution that has characteristics related to the normal distribution but has nothing to do with 02:46PM
logarithmic transformations. It just is lognormal. This is also the most commonly used frequency distribution in financial analysis for the exact same reasons, but nobody is taking logarithms of the data. They start out by assuming that it's 02:47PM

lognormal because of the characteristics that are described here, and it's used to estimate extreme risks, several papers I've published on.

Q Isn't that lognormal distribution a transformation done in order to reduce the skewness of the data? 02:47PM

A You obviously are just not even remotely listening to what I'm saying. Lognormal here is referring to a type of probability distribution that's characterized by a specific function that has nothing to do with logarithms. Okay? Dr. Olsen is taking a logarithm transformation of the data, which transforms it to get it to look like it's normally distributed, which is a completely different process, a completely different problem and comes out of two completely different areas of mathematics. 02:47PM

MR. TODD: Could we take a quick break?

MR. PAGE: Sure.

VIDEOGRAPHER: We are now off the Record. The time is 2:47 p.m. 02:48PM

(Following a short recess at 2:47 p.m., proceedings continued on the Record at 2:55 p.m.)

VIDEOGRAPHER: We are now on the Record. The time is 2:55 p.m. 02:56PM